

Appl. No. 10/786,281
Amendment dated September 27, 2007
Reply to Office Action of July 25, 2007

AMENDMENTS TO THE DRAWINGS

The drawing in FIG. 8 has been amended. Reference numeral 815 corresponding to primary fuel flow through pipe 813, is replaced with reference numeral 816.

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REMARKS/ARGUMENTS

This is a response to the Office Action of 25 July 2007. Reconsideration of this patent application is requested.

Status of the Claims

Claims 1-14 are pending in the application.

Claims 2, 7, 8 and 14 are withdrawn from consideration.

Claims 1-14 are rejected.

Amendments to the Specification:

The paragraph in the section CROSS-REFERENCE TO RELATED APPLICATIONS has been amended to correct the United States Serial No. of the related application from 10/353,863 to 10/353,683, thereby correcting a typographical error. No new matter is added by this amendment.

The reference numeral corresponding to the primary fuel was changed from 815 to 816. Reference numeral 815 was used twice: once for oxidant gas and another time for primary fuel. Reference numeral 815 corresponding to primary fuel flow through pipe 813, was replaced with reference numeral 816. This was an obvious error. No new matter is added by this amendment.

Amendments to the Claims:

Claims 2, 7, 8 and 14 are withdrawn from consideration.

Claim 6 is amended to depend from Claim 1 instead of Claim 5. Support for this amendment is found in paragraph [0009]. No new matter is added by this amendment to claim 6.

Claim 9 is amended, rewritten as an independent claim including all of the features of Claim 8 from which it originally depended. No new matter is added by this amendment to claim 9.

Amendments to the Drawings:

The drawing in FIG. 8 has been amended. Reference numeral 815 was used twice: once for oxidant gas and another time for primary fuel. Reference numeral 815 corresponding to primary fuel flow through pipe 813, was replaced with reference numeral 816. This was an obvious error. No new matter is added by this amendment to FIG. 8.

The Claimed Invention

The present invention relates to a nozzle.

According to independent claim 1, the nozzle comprises:

(a) a nozzle body having an inlet face, an outlet face, and an inlet flow axis passing through the inlet and outlet faces; and

(b) two or more slots extending through the nozzle body from the inlet face to the outlet face, each slot having a slot axis;

wherein the slot axis of at least one of the slots is not parallel to the inlet flow axis of the nozzle body.

According to independent amended claim 9, the nozzle comprises:

(a) a nozzle body having an inlet face, an outlet face, and an inlet flow axis passing through the inlet and outlet faces; and

(b) two or more slots extending through the nozzle body from the inlet face to the outlet face, each slot having a slot axis and a slot center plane;

wherein none of the slots intersect other slots and all of the slots are in fluid flow communication with a common fluid supply conduit and

wherein the center plane of at least one slot intersects the inlet flow axis.

According to independent claim 10, the nozzle comprises:

- (a) a nozzle body having an inlet face, an outlet face, and an inlet flow axis passing through the inlet and outlet faces; and
- (b) two or more slots extending through the nozzle body from the inlet face to the outlet face, each slot having a slot axis and a slot center plane;

wherein a first slot of the two or more slots is intersected by each of the other slots and the slot center plane of at least one of the slots intersects the inlet flow axis of the nozzle body.

Claim Rejections – 35 USC §102

Claims 1-3, 8 and 9 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 2,959,361 to Lingis.

Claims 2 and 8 are withdrawn making the rejection of claims 2 and 8 moot.

Applicants respectfully traverse the rejection of claims 1, 3 and 9.

The examiner states:

“Regarding claim 1, Lingis discloses a nozzle body inlet face (at 16), an outlet face (at 18), and an inlet flow axis passing through the inlet and outlet face (imagined), the nozzle having slots (26, 28, 22) going through the nozzle body, parts of the slots (26, 28) having slot axis that are not parallel to the inlet flow axis of the body (see Figure 3). As per claim 2, the nozzle has an inlet pipe (10) connected top the inlet face of the nozzle. As per claim 3, the slots (22, 26, 28) are not parallel to each other. As per the later part of claim 8, none of the slots intersect other slots. As per claim 9, Lingis discloses a slot (22) that intersects the inlet flow axis.”

Claim 1 and dependent claim 3 require that the slot axis of at least one of the slots is not parallel to the inlet flow axis of the nozzle body. Lingis does not disclose any slots having a slot axis that is not parallel to the inlet flow axis of the nozzle body.

A slot axis is defined in paragraph [0040]:

“A slot may be further characterized by a slot axis defined as a straight line connecting the centroids of all slot cross-sections. In addition, a slot may be

characterized or defined by a center plane which intersects the major cross-section axes of all slot cross-sections. Each slot cross-section may have perpendicular symmetry on either side of this center plane. The center plane extends beyond either end of the slot and may be used to define the slot orientation relative to the nozzle body inlet flow axis as described below.” (*emphasis added*).

The term inlet flow axis is defined in paragraph [0042]:

“The term "inlet flow axis" as used herein is an axis defined by the flow direction of fluid entering the nozzle at the inlet face, wherein this axis passes through the inlet and outlet faces. Typically, but not in all cases, the inlet flow axis is perpendicular to the center of nozzle inlet face 205 and/or outlet nozzle face 17, and meets the faces perpendicularly. When nozzle inlet pipe 5 is a typical cylindrical conduit as shown, the inlet flow axis may be parallel to or coincident with the conduit axis.”

Figure 3 of Lingis shows two slots 26 and 28, which at first glance appear to be at an angle to the inlet flow axis of the nozzle body. However, this is an illusion as the slot is shown on a beveled face of the nozzle. It is clear from Figure 1 that the slot axes of slots 26 and 28 are in fact **parallel** to the inlet flow axis of the nozzle body. The slot axes of slots 26, 28 and 24 are all parallel to each other and are parallel to the inlet flow axis.

Therefore Lingis does not disclose all of the features of the claimed invention as defined by Claims 1 and 3, specifically a slot having a slot axis that is not parallel to the inlet flow axis of the nozzle body.

Applicants respectfully request that the Examiner withdraw the rejection of Claims 1 and 3.

Amended Claim 9 requires that the center plane of at least one slot intersects the inlet flow axis.

As discussed above, the slot axes for the slots of Lingis are parallel to the inlet flow axis of the nozzle body. Therefore, in Lingis, none of the center planes of any of the slots of can intersect the inlet flow axis.

Therefore Lingis does not disclose all of the features of the claimed invention as defined by amended Claim 9, specifically that the center plane of at least one slot intersect the inlet flow axis.

Applicants respectfully request that the Examiner withdraw the rejection of Claim 9.

Claims 10-12 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 5,664,733 to Lott.

Applicants respectfully traverse the rejection.

The examiner states:

“As per claim 10, Lott discloses nozzle body inlet face (at 74), an outlet face (at 24), and an inlet flow axis passing through the inlet and outlet face (imagined), the nozzle having slots (50) going through the nozzle body, each slot having an axis (imaginary) wherein a first slot (any, shown in Figure 4) is intersected by each of the other slots and the slot center plane of any of the slots intersects the flow axis of the nozzle body. As per claims 11-12, the center planes of any of the slots intersect the inlet flow axis at an angle of 0°.”

The definition of the center plane of a slot is given in paragraph [0040], reproduced above in the discussion of claims 1-3, 8 and 9.

Claims 10-12 require that the slot center plane of at least one of the slots intersects the inlet flow axis of the nozzle body.

Intersect does not mean coincident. The Merriam-Webster Dictionary defines intersect as “to pierce or divide by passing through or across.”

In Lott, all of the center planes of all of the slots are coincident with the inlet flow axis of the nozzle body. In Lott, none of the slot center planes intersect the inlet flow axis of the nozzle body as required by Claims 10-12.

Claim 11 further reinforces the meaning of intersect, stating that the first slot intersects the inlet flow axis at an included angle of between 0 and about 30 degrees.

Therefore Lott does not disclose all of the features of the claimed invention as defined by Claims 10-12, specifically that the slot center plane of at least one of the slots intersects the inlet flow axis of the nozzle body.

Applicants respectfully request that the Examiner withdraw the rejection of Claims 10-12.

Claim Rejections – 35 USC §103

Claims 4-7 are rejected under U.S.C. 103(a) as being unpatentable over U.S. Patent No. 2,959,361 to Lingis in view of U.S. Patent No. 5,664,733 to Lott.

Claim 7 is withdrawn making the rejection of claim 7 moot.

Applicants respectfully traverse the rejection of Claims 4-6.

Claims 4-6 depend from claim 1. Claim 1 requires that the slot axis of at least one of the slots is not parallel to the inlet flow axis of the nozzle body. As discussed above for Claims 1 and 3, Lingis does not disclose any slots having a slot axis that is not parallel to the inlet flow axis of the nozzle body.

Lott also discloses only slots having slot axes that are parallel to the inlet flow axis of the nozzle body. Lott does not disclose any slots having a slot axis that is not parallel to the inlet flow axis of the nozzle body.

The Examiner has failed to establish *prima facie* obviousness of the claimed invention.

The combination of Lingis and Lott do not disclose all of the features of the claimed invention as defined by claims 4-6, specifically a slot having a slot axis that is not parallel to the inlet flow axis of the nozzle body.

According to MPEP § 2143.03, to establish *prima facie* obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art. All of the claims limitations are not taught or suggested in Lott and/or Lingis.

Applicants respectfully request that the Examiner withdraw the rejection of Claims 4-6.

Claims 13 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,664,733 to Lott.

Claim 14 is withdrawn making the rejection of claim 14 moot.

Applicants respectfully traverse the rejection of Claim 13.

Claim 13 depends from claim 10. As discussed above for claims 10-12, Lott does not disclose all of the features of the claimed invention as defined by Claim 10, specifically that the slot center plane of at least one of the slots intersects the inlet flow axis of the nozzle body.

According to MPEP § 2143.03, to establish *prima facie* obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art. All of the claims limitations are not taught or suggested in Lott.

Applicants respectfully request that the Examiner withdraw the rejection of Claim 13.

Prior Art of Record, Not Relied Upon by Examiner

Applicants acknowledge that U.S. Patent No. 6,464,201 to Job, U.S. Patent No. 5,622,489 to Munro, U.S. Patent No. 5,368,237 to Fulkerson and U.S. Patent No. 3,647,147 to Cook have been cited as prior art of record, but not relied upon by the Examiner, although considered pertinent by the Examiner to Applicants' disclosure.

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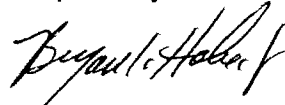
SUMMARY

Applicants believe that the foregoing constitutes a complete and full response to the Action of record. Applicants respectfully submit that this application is now in condition for allowance. Accordingly, an indication of allowability and an early Notice of Allowance are respectfully requested.

The undersigned grants the United States Patent and Trademark Office the right to charge Deposit Account Number 01-0493 in the name of Air Products and Chemicals, Inc. for any fees required and any additional fees or overpayment of fees required in furtherance of this paper.

For all of the foregoing reasons, Applicant respectfully requests withdrawal of the rejection of Claims 1, 3-6, and 9-13, inclusive, and earnestly solicit a Notice of Allowance thereof.

Respectfully submitted,



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